

Claims

1. A method of measuring a performance of a route in an internetwork, the route coupling an internetwork server to a terminal on the internetwork, the method comprising:

at a frequently trafficked portal on the internetwork, detecting a request for a web page from the terminal, wherein the web page is at least partially stored at the frequently trafficked portal;

in response to the request for the web page, downloading the web page to the terminal via the internetwork;

from the web page, retrieving a Uniform Resource Locator (URL) for a web object referenced in the web page;

resolving the URL to the internetwork server;

detecting a request for the web object from the terminal at the internetwork server;

in response to the request for the web object, sending the web object from the internetwork server to the terminal; and

concurrent with sending the web object, measuring a Round Trip Time (RTT) of one or more packets sent between the internetwork server and the terminal.

2. The method of claim 1, wherein the web page is at least partially encoded in a markup language.

3. The method of claim 2, wherein the markup language is Hyper Text Markup Language.

4. The method of claim 3, wherein the sending the web object from the internetwork server to the terminal is performed via a Hyper Text Transfer Protocol (HTTP).

5. The method of claim 4, wherein the Hyper Text Transfer Protocol is HTTP v 1.0.

- 1 6. The method of claim 4, wherein the Hyper Text Transfer Protocol is HTTP v
2 1.1.
- 1 7. The method of claim 1, wherein the web object is visually imperceptible.
- 1 8. The method of claim 1, wherein the web object comprises a single pixel.
- 1 9. A method of measuring performance in a network, the method comprising:
2 between a first point in the network and a second point in the network,
3 wherein the first point is identified by a first address and the second point is
4 identified by a second address, generating one or more pairs of packets, each of
5 the one or more pairs of packets including:
6 a packet sent from the first point to the second point; and
7 a packet received at the second point from the first point, wherein
8 the received packet comprises a response to the sent packet;
9 measuring a plurality of durations between the sent packets and the
10 received packets for the one or more pairs; and
11 calculating, at least from the plurality of durations, parameters of at least
12 part of the network, wherein the parameters comprise per-group delay, jitter, and
13 loss.
- 1 10. The method of claim 9, wherein the pairs of packets comprise messages in
2 Transmission Control Protocol (TCP) format.
- 1 11. The method of claim 10, wherein one or more of the sent packets is a
2 SYN/ACK packet.
- 1 12. The method of claim 10, wherein one or more of the received packets is an
2 ACK packet.
- 1 13. The method of claim 9, wherein the network is an internetwork.
- 1 14. A system for measuring performance of an internetwork, the system
2 comprising:
3 a frequently trafficked web portal in the internetwork;

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4 a web page at least partially stored on the frequently trafficked web portal,
5 the at least partially stored web portal including a Uniform Resource Locator
6 (URL) for a web object, such that the web object is not stored on the frequently
7 trafficked web portal;

8 a Domain Name System (DNS) server on the internetwork; the DNS server
9 including a reference which maps the URL for the web object to an Internet
10 Protocol address for an internetwork on the internetwork;

11 a web browser coupled to the internetwork, wherein the web browser sends
12 a download request for the web object to the server; and

13 a measurement process executed on the server, such that in response to
14 the download request, the measurement process measures one or more Round
15 Trip Times between the server and the web browser.

1 15. The system of claim 14, wherein the web page is at least partially encoded
2 in a markup language.

1 16. The system of claim 14, wherein the markup language is Hyper Text
2 Markup Language (HTML).

1 17. A method of measuring a performance of a route in an internetwork, the
2 route coupling an internetwork server to a terminal on the internetwork, the
3 method comprising:

4 at a frequently trafficked portal on the internetwork, detecting a request for
5 a web page from the terminal, wherein the web page is at least partially stored at
6 the frequently trafficked portal;

7 from the web page, retrieving a Uniform Resource Locator (URL) for a web
8 object referenced in the web page;

9 resolving the URL to the internetwork server;

10 detecting a request for the web object from the terminal at the internetwork
11 server; and

12 in response to the request for the web object, measuring a Round Trip
13 Time (RTT) of one or more packets sent between the internetwork server and the
14 terminal.